

## Tabb Lakes - Retention Lakes Maintenance Program – Diffuser Replacement

(Published in the 3<sup>rd</sup> Quarter, 2022 HOA Newsletter)

In 2005, Tabb Lakes HOA installed an aeration system in each lake to help improve their health. Back then, there were numerous problems with our lakes which the system has since helped moderate.

For those unfamiliar with the equipment, each system is comprised of three parts. There is an air compressor located on the edge of each lake, a series of thick rubber hoses that feed air from the compressor to underwater aerators, and six underwater dual diffuser aerators per lake. The compressor pushes air through the length of the hose, into the diffuser, and inflates the two rubber diaphragms. The diaphragm has very small holes in it so the air escapes under pressure as thousands of small bubbles. This simple process aerates the lakes. If you look at the lakes, you can see air bubbling up out of the water at six locations in each lake. The equipment selected is called the Vertex Lake Aeration System.

The systems have been operational for about 17 years and runs 24 hrs a day, 365 days a year. Over the years, the compressors have been repaired or replaced as they wear out. Recently, we had to replace the first of the twelve underwater aerators. Since this is the first time anyone has seen what they look like, I have included a picture of the old aerator that was removed. What we found is that, over the years, a hard scale formed over the two diffuser's rubber diaphragms. This eventually restricted the air flow into the water, reducing their effectiveness and possibly putting a strain on the compressor.



The HOA board is now evaluating the condition of the remaining eleven aerators and possibly replacing those that are near the end of their life cycles.

For an in-depth discussion on the background, problems, and why an aeration system was chosen, read the three-page information paper the HOA board published in 2005. You can find that paper within the Documents sections of our HOA website under the Lakes Information Library link, or use the following direct link to the document:

<http://tabblakes.org/documents/LakeInfo/OtherInfo/RetentionLakesMaintenanceProgram.pdf>

For more information on the locations of the compressors and aerators, go to the Documents section of our HOA website and click on the Maps and Utility Library link. You will find detailed maps of the north and south ends of our HOA that show their locations. The link is below.

[http://tabblakes.org/index.php?option=com\\_content&view=article&id=27&catid=2&Itemid=113](http://tabblakes.org/index.php?option=com_content&view=article&id=27&catid=2&Itemid=113)

## Tabb Lakes - Retention Lakes Maintenance Program Diffuser Replacement Update

(Published in the 1<sup>st</sup> Quarter, 2023 HOA Newsletter)

We recently published an article about our HOA aerations system in our 3<sup>rd</sup> Quarter (Aug 2022) HOA newsletter. The article explained the history and why they were installed in our two lakes and how they operate. We also explained the problems we were having with the diffusers and why we were planning to replace them. The below information is a follow-up to that article and provides you with details on the completed upgrades.

The HOA board approved replacing all 12 diffusers (6 in each lake) since the original diffusers were becoming clogged after 17 years of continuous operation. On October 2022, SOLitude Lake Management completed the replacement of the diffusers along with some additional maintenance on the air supply hoses. The cost of replacement was about \$6000. Below are pictures of the old and new diffusers.



*Old diffuser (installed in 2005  
and removed in 2022)*



*New diffuser (installed in 2022)*

Since this is the first time we replaced our diffusers, we now have a timeline for future repairs that we can calculate into our HOA planning and budget. We can plan for a life expectancy between 15-20 years; we know these new diffusers are easy to “hook and capture” to pull up to the surface for inspection and possible repairs; and the rubber diaphragm (2 per diffuser) is replaceable, so the costs of future repairs should be reduced.

We plan to add these two recent newsletter articles to our HOA library as an addendum to the original Tabb Lakes “Retention Lakes Maintenance Program” document written in 2005 when the system was installed. That way, future HOA Board Members and Committee Lake Managers will know what they look like and how and why they were replaced “back” in 2022.

The diffusers play an important part in maintaining the health of our lakes. For more information on the benefits of our lake aerator system, read the following document located on our Tabb Lakes HOA website at:

<https://www.tabblakes.org/lakemgmt/LakeInfo/OtherInfo/RetentionLakesMaintenanceProgram.pdf>

Written by Lou Lafrenaye

## Tabb Lakes - Retention Lakes Maintenance Program - Compressors

(To be published in the 3<sup>rd</sup> or 4<sup>th</sup> quarter 2023 HOA Newsletter)

This is the third in a series of articles that explains our lakes aeration system and will focus on the air compressor component.

The compressors provide air to the diffusers in the lakes and run 24 hrs a day / 365 days a year. Each lake has two compressors that maintain air flow to the six diffusers in each lake. The two compressors are in containers located several feet from the lake bank at about the central point along each lake. They are collocated with the location of the electrical junction box and electric meter that was installed to provide the power connection to the fountain/lights in each lake. Photo 1 is a picture of the Lake 1 compressor area showing the wooden sound box covering the compressor's metal container. Lake 2 has a similar setup. You can see the electrical box connection and the electric meter behind it. That is also the location of the relay switch that typically needs to be reset when the fountain goes out due to an electrical overload.

The wood box was built by a previous board member and installed over the metal container back in 2005 to reduce the sound of the compressors to the homeowners. Without them, the compressors can be heard when nearby even though they are housed in a metal container. Photo 2 shows the wooden top and sides removed so you can see the metal container.



*Photo 1*



*Photo 2*

Photo 3 shows the open metal container and the two compressors along with the electrical connections and an electrical ventilation fan on the right side to minimize the heat buildup in the container. Each compressor pumps air into three hoses that provides compressed air to three underwater diffusers. There are six diffusers per lake hence 2 compressors per lake. Photo 4 shows the assembled containers and electrical connections from a different angle.





*Photo 3*



*Photo 4*

These compressors require routine maintenance, and sometimes must be replaced. The overall costs vary each year. The yearly cost is provided to our HOA members during our yearly general HOA meeting in October. The HOA Board, our Lake Maintenance Committee members, and our HOA management company monitor their operation and contact Solitude Lake Management when anything needs repair.

For more information on the locations of the compressors and aerators, go to the Documents section of our HOA website and click on the Maps and Utility Library link. You will find detailed maps of the north and south ends of our HOA that show their locations. The link is below.

[http://tabblakes.org/index.php?option=com\\_content&view=article&id=31&catid=2&Itemid=195](http://tabblakes.org/index.php?option=com_content&view=article&id=31&catid=2&Itemid=195)

Written by Lou Lafrenaye